

been erected at Kidderminster, from a design furnished by Mr. J. Nettleship, architect. Mr. H. Ankrett was the builder. It is in the Elizabethan style, with sharp-angled roofs and campanile. The principal school-room will accommodate 200 children. —Mr. George Young, of Sunderland, has contracted to build offices at the main entrance of the Sunderland Dock, to be surmounted by a clock-tower. —The Berwick ramparts are again put up for sale by the Government, greatly to the indignation of many of the inhabitants. —At the recent Glasgow fair, Anderson, the Wizard of the North, had an enormous structure, with a frontage 250 feet in length, representing Balmoral Castle. It was walled round, had trees planted in the inclosure, and a terrace ornamented with hot-house and other plants from the Botanic gardens. The cost of erecting this building is said to have been 1,000l. —The town commissioners of Enniskillen are about to purchase a 'first-rate' fire-engine and a graduating fire escape ladder, for safety to the town against fire.

#### MANCHESTER NATURAL HISTORY SOCIETY.

A new wing is about to be added to the museum of this society, consisting of three stories, 62 feet in length. These rooms will be continuations of those on the east end of the building, and when united each will be 92 feet long.

Plans have been prepared by Mr. Thomas Dickson, architect, of Manchester, for covering the entire ground belonging to the society. There is to be on the west end a wing corresponding with that on the east, and these are to be united by a corridor, likewise three stories in height. The rooms of the corridor will be 60 feet long, but when continued with those of the wings will exhibit a stretch of 102 feet in length. In the centre of the quadrangle there is to be a large meeting room about 60 feet in length, lighted from the roof. When the whole shall have been completed the institution will be worthy this great commercial city. At present the museum is the largest in the provinces, and for extent, beauty, characteristic display and attitudes, the collection of birds has long been known.

The collection of quadrupeds, too, although less comprehensive than that of the birds, exhibits many specimens of artistic excellence, all of which are the handiwork of a self-taught man, Mr. Timothy Harrop, taxidermist to the society.

#### THE ARCHITECTURAL EXHIBITION.

The collection of drawings and designs invited by the Architectural Association will be open to the public free on Monday, the 12th. On Saturdays a charge will be made, and we hope to find some few choosing that day for their visit to aid the endeavour.

It contains about 190 drawings, and is a considerable improvement on the collection of last year, although still far from what it should be. Amongst the exhibitors are Messrs. Donaldson, Fergusson, Walters, Scott, Britton, Lamb, Ashpitel, Godwin, Whitchord, Christian, Allom, Colling, Andrews, Habershon, Clark and Norton, Ordish, Street, &c.

#### PICTURES BOUGHT BY THE ART UNION OF LONDON.

The prizeholders of the Art Union of London have purchased from the Royal Academy, twenty-three works of art, at the cost of 1,390l.; from the British Institution, eight, 412l.; from the Society of British Artists, thirty-one, 1,040l.; from the National Institution, Regent-street, eighteen, 525l.; from the Water Colour Society, fourteen, 339l.; and from the New Water Colour Society, fifteen, at the cost of 515l., making in the whole the sum of four thousand two hundred and twenty-one pounds, which was handed to the various artists by the honorary secretaries on Tuesday morning last. Several hundreds of pounds have been paid beyond the above amount by the prizeholders themselves.

The various works of art are now gathered together in the Suffolk-street Gallery, and will be opened to the subscribers and their friends on Monday. Mr. E. M. Ward's picture of

"James II. receiving the news of the Landing of the Prince of Orange," Mr. Linton's "Venice," Mr. Radgrave's "Graciosa," Mr. Hursthouse's "Lady Macbeth," are the most striking pictures. In the Water Colour Room Mr. Warren's "Our Saviour in the Cornfield," is the leading feature.

#### REPAIR OF ST. STEPHEN'S, WALBROOK.

In reply to a letter in your columns on this subject, I should indeed rejoice if the funds at the disposal of the commission for the repair of this, the *chef d'œuvre* of Sir Christopher Wren, enabled them to do all that is desirable to "London's architectural gem." This would entail buying and removing the house attached to its tower, chipping off its unsightly stucco and working down to the original stone, or possibly refacing it from the ground to the balustrades.

The committee have not, however, found out the way of making 1,000l. do the work of 5,000l. They have consequently decided on doing to the exterior only what is necessary for due preservation; and they hope the remainder of the sum at their disposal will enable them to restore the interior to its best appearance in its best days.

To direct them in this, they have visited most of the churches of Sir Christopher's erection, and have unanimously agreed that every attempt (and they have been many) to alter his original work or to add to his original embellishment has signally failed. They have consequently determined not vainly to try to improve the beautiful building confided to their care, but they will endeavour to restore and to preserve it.

I fully join "Parishioner" in his desire to have both outside and inside made at once complete, and will put his seal to the test. I will put down twenty guineas for this purpose, and ensure 500l. by collection, if he will do the same. I agree with him that St. Stephen's has claims on the public; it is the best work of England's best architect; its complete repair ought to be a matter of civic pride,—it is almost a national duty. W. F. ROCK.

Walbrook.

#### Books.

*The Commercial Hand Book of Chemical Analysis, or Practical Instructions for Determining the Value of Substances used in Trades, Arts, and Manufactures.* By A. NORMANDY, author of "Practical Introduction to Rose's Chemistry," &c. Knight and Sons, Foster-lane.

SOPHISTICATION and adulteration, like other great branches of knowledge, have made wonderful advances in our age of sharp-set acquisitiveness and ingenuity. The science of over-reaching has been brought to its present high state of perfection at least as much by the diligent researches of bargain-hunters and economical screws, as by the initiation of competing tradesmen into all the subtleties of the devil's chemistry, in order to meet the universal demand for cheap articles. An investigation into the darker secrets of trade and art has thus become a scientific pursuit, as useful and as interesting to men of science as are researches into almost any of the more curious secrets of nature itself. The arts of adulteration and sophistication "have invaded the luxuries and necessities of both the rich and the poor—raiment, food, medicine, furniture, the means of life, and the requirements of disease; all that can be mixed, hackled, twisted, ground, pulverized, woven, pressed—all articles of consumption in trade, in manufactures, in the arts—in a word, all that can be made matter of commerce and be sold, is adulterated, falsified, disguised, or drugged."

The object of the present volume is to indicate the various falsifications or impurities which either intentionally, accidentally, or naturally contaminate the various articles met with in commerce, and to enable the trader, manufacturer, miner, or general public, to detect the nature and amount of these sophistications and impurities; or, in other words, to ascertain the real or intrinsic value of such articles.

Hitherto this has been attained only by a

regular analysis by the practical chemist, and several most valuable treatises of chemical analysis have been published; but in general these are far too professed and elaborate to be of much use to the trader, manufacturer, or public generally. Dr. Normandy demas, in the present treatise, and by the aid of such works as those of Rose, Dumas, Ure, and other analysts and chemical authors of note, to simplify the process of analysis and detection as far as possible, so as to enable those who deal in or purchase various articles of trade and manufacture, to judge for themselves of their qualities and value. And in this design we dare say the author has, to a considerable extent, succeeded, although we admit that the precise amount of stupidity or want of tact which his endeavours may meet with on the part of many who may still be clever enough at bargaining, may not easily be estimated. Nevertheless in some instances we think that simpler tests might have been at least suggested concurrently with the more strictly chemical. For instance (although this first instance which suggests itself to our recollection does not refer to our own professional pursuits exclusively), while instructing the head of a family, or other party most likely to be interested, how to digest 100 grains of iodine in one pint of water, and use one fluid ounce of the supernatant liquor, for the detection of fecula or mashed potatoes in 100 grains of bread put into a glass-beaker with one fluid ounce of distilled water,—it might have been incidentally noted that a hot knife, thrust into a loaf of bread, would in a moment indicate the existence at least, if not the precise quantity, of the adulterant. In trade purchases, however, such as those of quantities of white lead, of hydraulic or other cements or limes, of steel, cast-iron, zinc, &c., we do not of course deem such an off-hand way of procedure worthy of anything like special or systematic notice. Something like a strict chemical analysis, however simplified, there must be, in order to form a correct judgment of quality and value. And of such analysis there is no want here. As an example and specimen of the author's mode of treating his subject we may quote some of his remarks on mortars and cements.

Hydraulic mortars and cements are principally mixtures of lime and clay, in proportions which render them more or less susceptible of hardening in water: according to Berthier their composition is as follows:—

	Moderately Hydraulic			Very Hydraulic			
Carbonate of lime	60.2	65.5	43.0	62.5	70.5	80.0	72.5
Do. of magnesia	3.0	0.5	2.0	4.1	3.6	1.5	3.5
Do. of iron	6.5	"	"	8.0	"	"	"
Do of manganese	6.5	"	"	1.5	"	"	"
Clay or silica	7.5	7.5	15.0	13.4	12.2	18.5	23.0

As the preparation of hydraulic mortars depends on the composition of the lime-stone employed, it is important to determine by analysis the constituents of the lime-stones intended for the purpose: this may be done in the following manner:—

Take a given weight, for example 50 grains of the lime-stone to be examined, and dissolve them in hydrochloric acid diluted with half its weight of water. The lime, magnesia, and oxide of iron will dissolve, whilst the clay and the silica being left in an insoluble state, may be collected on a filter, washed, dried, ignited, and weighed. This exceedingly simple examination is ordinarily sufficient to judge of the quality of the hydraulic lime which may be produced from it.

If the operator wishes to determine the proportion of the other constituents, the acid solution filtered from the clay and sand, as above said, should be supersaturated with ammonia, which will precipitate the iron in the form of a bulky reddish brown precipitate, which should be collected on a filter, washed, dried, and ignited. The bulk of the precipitate shrinks enormously in drying, and when dry it should be gradually ignited in order to avoid decrepitation.

The filtrate, which contains a great excess of mal ammoniac resulting from the supersaturation of the acid liquor with ammonia, is then treated by oxalate of ammonia, which precipitates the lime in the state of oxalate of lime. This salt may be collected on a filter, washed, and calcined with an excess of sulphuric acid, and from the sulphate of lime obtained the weight of the lime in the lime-stone is calculated: 60 grains of sulphate of lime contain 28 grains of lime, or, decimally, each grain of sulphate of lime represents 0.41176 grain of lime: or the precipitated oxalate of lime may be ignited and weighed as carbonate of lime.

Lastly, the magnesia is determined by boiling for a long time the liquor filtered from the oxalate of